out the consideration of and dependence on meterological data and he therefore is vitally interested in the work of the Weather Bureau as it is the source of much of his fundamental data.

Fifteen years' apprenticeship in the study of problems presented to the agricultural engineer have given the writer a wholesome respect for the work of the Weather Bureau, and a desire to see its scope extended and its valuable records maintained without interruption.

The agricultural engineer has two uses for Weather Bureau records, one in connection with his consideration of agricultural problems, and the other in his studies for the building of works of various sorts.

In the investigation of agricultural problems the engineer is often required to report on the agricultural possibilities of a country where little farming is carried on. He seldom finds well-equipped Weather Bureau stations in such localities, and has to depend on near-by stations in locations similar as regards elevation, topography, and exposure. By comparison of vegetation and the collection of a short series of observations he can generally form some fairly accurate measure of the climate of the district under consideration. The second point which is important here is that weather stations in new and remote localities nearly always prove useful sooner or later. There is hardly any part of the United States which will not become valuable and be inhabited in the next 50 years, and it is none too soon to commence to collect records. In many areas much good is already coming from the records being gathered from remote mountain stations during the winter time, and as water resources are developed and conserved for irrigation and power these stations will increase in number and importance. Commercial organizations are putting in stations where the Weather Bureau can not take up the work and much more of this kind of extension is likely to take place in the near future. There is considerable advantage in having any class of work handled by experts, and it is generally true that the various weather services of federal or State Governments can collect, preserve, and publish these records in better shape than can individual corporations. For this reason the extension of the United States Weather Bureau work in some regions seems very necessary.

In the consideration of agricultural problems, frost records, sunshine, hail, wind velocities, extremes of heat and cold, daily variation of temperature, and rainfall by months and seasons are most important. Humidity, evaporation, rate of rainfall, snow depths, fogs, etc., are of less importance, though exceedingly valuable from other engineering standpoints.

Wind velocities, duration of winds, direction of extreme winds, and so forth have an important bearing on the kinds of crops which can be grown and the kinds of soil which can be profitably handled.

Frost records seem difficult to collect and are often very local in value. A light frost which nips the beans in the observer's garden is apt to be reported as a killing frost and go into the records as such. Such a record would be very misleading in later years. If some classification could be given of the severity of frosts, other than those now in use, light frost and killing frost, it is thought the records would prove of more permanent value.

The other elements which go to make up a complete meteorological report on any locality are all important, no one of them can be omitted without loss, yet when it is not possible to collect all the various kinds of records a partial list is of much value. The distribution of regular Weather Bureau stations where all classes of records are kept is now sufficient to enable one to interpolate and supply missing data for the less broadly equipped cooperative stations.

The space allotted will not permit a wide discussion of the general value of weather records to agricultural engineers or permit a full view of the problem, and a few important problems only will therefore be touched upon.

Many times during a season the active engineer is required to consider questions of the run-off from stream watersheds. Often no complete records of flow are available and even where stream flow measurements have been made the period over which they extend is none too long. Precipitation records generally extend over much longer periods and the engineers have to consider the relation between precipitation and run-off. This is certainly one of the most unsatisfactory pieces of work one can undertake. There is no question but that there is some general relation between stream flow and run-off, but there are so many factors which enter to complicate the problem that it has never been satisfactorily solved. We are coming nearer a solution every year, and now that more attention is being paid to collection of records from the higher parts of the watersheds, we have a more hopeful view-point than ever before. It is to be hoped that every effort will be made to collect weather data from such places and in such manner as will enable us to make some estimate of the relation between these figures.

Evaporation studies have been carried on at intervals for many years, but the sum total of our knowledge of the evaporation from bodies of water is not great. The recent activity of the Weather Bureau in this matter is appreciated, and it is hoped our knowledge of the subject will be greatly increased.

The engineer who is operating a water power plant or an irrigation project is much interested in the matter of long range prediction of the character of the season. If we could be informed in advance whether a season is apt to be wet or dry, the information would be of untold value. So far very little in the way of such prediction has been attempted, but some hope is extended to us that in time it may be possible to predict the general character of the weather for longer periods than now. Every extension of the period of prediction will be immensely valuable to us. Many of our western streams are subject to sudden and violent floods, and the collection of data regarding precipitation in the mountains will help the man in the plains to be prepared for these floods as well as for periods of low water. There is some hope that we will be able also to predict from these records something of the character and amount of run-off considerably in advance of the time when it occurs.

The matter of publication of weather records has always been troublesome to the busy man, and the division along State lines a source of annoyance, but this has been corrected by the new method of publication in hydrographic districts. The amount of library material which must be collected by the individual engineer is very great and this method of publication will enable the filing of all weather records one person is usually interested in, in compact form.

It is readily seen that weather records are the ground floor facts on which many important engineering problems are based. These records are becoming more important yearly, and with the addition of the new lines of work recently started future records will be most satisfactory. Records from remote localities are often the most important and the extension of the Weather Service over new territory will be very valuable to future generations.

NOTE.—Referring to remarks made above on the classification of frosts it may be said that the frost data of any place would have greater value if, with the report of a frost, the observer would mention just what damage was done.—*A. H. T.*

PRACTICAL BENEFITS OF THE WEATHER BUREAU.

By HORACE W. SHELEY, Assoc. M. Am. Soc. C. E.

Among the many bureaus maintained by the Federal Government for the purpose of collecting scientific data for the use of its citizens there is none that deals with the subject of more general interest to the public than that of the Weather

Bureau. Even to-day the average man looks into his morning paper to find out what sort of weather is predicted for the next few hours, and in the future, when observations shall have been extended over a longer period of years, and it may therefore be possible to make predictions for a longer period of time with more accuracy than is now possible, the information presented by the Weather Bureau will undoubtedly be the most widely read of any literature published by the Government.

It seems unfortunate that the objects, methods, and results of the Bureau are not more widely known and understood throughout the country, although along the sea coast and in many of the fruit and other districts the value of the Bureau is already properly appreciated. It is the object of this paper to show how the weather observations can be of great practical utility to-day and in the future to us all.

The vast saving of life and property effected by the Weather stations along the sea coast and the Great Lakes by timely warnings of approaching storms is so well known to shipping interests and the public that it is unnecessary to consider it here further than to say that the value of the observations will probably be materially increased before long by the use of wireless telegraphy and international cooperation in obtaining observations.

On land at the present time the chief commercial value of the Bureau is in the warning of the coming of cold waves and late frosts to fruit and truck farm regions where, owing to the high value of crops, it is possible for a short time to protect them against injury by raising the temperature a few degrees artificially by means of smudging or by some other method. The first use of the reports of the Weather Bureau for this purpose was made by the citrus fruit growers of Florida and California, and it is probable that the savings to the orange crops alone would very much more than pay for the cost of the Bureau to the Government. In the enterprising fruit regions producing apples, peaches, etc., such as Palisade and Grand Junction, in western Colorado, the Weather Bureau has already been of great assistance to the fruit growers. It has been said that there would have been at least a partial, possibly a complete, failure of crops in the season of 1909 had it not been for smudging, that is artificial heating of the orchards by means of oil pans. The Weather Bureau gave advance warning of the coming of colder weather and a probable frost some days before it actually came, enabling growers to prepare for it, and just before it was due instructions were sent out to start raising the temperature.

In planning for the development of a new irrigation district, it is essential to have some idea of what crops can be grown, and of the returns per acre so that the practical commercial limit of expenditure for the irrigation plant may be calculated. In such a region records of rain, temperature, and frost supply much of the necessary information, and since the Weather Bureau officials have been far-sighted in having as many stations as possible in advance of the greater development of the country, it usually happens that one is able to find some place near the region it is proposed to develop where climatic records have been kept. The writer has in mind the proposed development of an irrigation project, where comparison of the altitude, soil, and climate with that of a district a hundred miles away already developed into a very famous fruit district, indicates that the same results may be accomplished in the new district with proper effort.

A further practical use of weather observations is the estimation of the probable run-off of streams by calculation of the rainfall. The writer is well aware that there is no ratio of run-off to rainfall that can be applied to different watersheds, but he does contend that the engineering profession could safely make more extended use of precipitation data than now. In the West, particularly, water power and irrigation developments generally precede any extended measurements of the amount of water discharged annually by the stream. Sometimes only a few measurements of the stream have been made when it is taken up for development, and it is necessary to devise some method of estimating the run-off of the stream; because those proposing to utilize the stream are unwilling to wait long years while it is being gaged, and likely they would lose their water right meanwhile. Under such circumstances is it not better to take the ratio of run-off to rainfall on the basis of the nearest drainage basin of similar character and altitude, where the amount carried off by the stream has been actually gaged, and apply this ratio to the stream to be developed, rather than to guess altogether?

Again, even in cases where the stream has been actually measured for a few years, the question comes up, has the period of measurement been one of normal or abnormal run-off; has there been more water than during average years, or how much less water than the amount measured are we liable to have during dry years?

Accurate stream gaging throughout the year is a comparatively new thing. Of the streams to be utilized in the future, particularly in the arid regions, few have been measured accurately for a longer period of time than 5 years, very few more than 10, and it is exceptional for more than 15.

Now, since precipitation records usually have been kept for a much longer time than stream measurements, it is possible to use them for a check on the stream measurements. For example: The amount of water discharged by the stream has been measured for 3 years, and we want to know whether the period was an average one or not. Now, say, that there is a place, possibly not in the drainage area of the stream in question, but close enough so that the seasonal variations probably would be alike for both places, a year of exceptional rainfall at the weather station occurring at the same time as a year of exceptional floods in the river, where precipitation records have been kept for 20 years. Now, if the records of these 3 years at the weather station show that the rainfall was normal during the 3-year period and for a year preceding that period, then we would have much justification for saying that the flow of the stream probably was normal for that period. If the rainfall record for the period had been unusually great it would be necessary to regard the run-off record with suspicion and deduct something for it. If the rainfall records had been abnormally low for the period and possibly for a year before, making the period the driest for 20 years, we would be fairly safe on figuring on the measured discharge being the minimum discharge of the stream. The longer the precipitation records the more reliable the calculation.

Often the gaging points are not situated at the point on the stream just where the water is to be diverted from it. The writer has in mind one case where the diversion point is 45 miles below the old gaging station, or point of measurement, of a river, and the drainage area is three times greater at the point of diversion than it is at the gaging station. The proposed point of diversion of another stream is 100 miles above the Government gaging station. It is obvious that some correction must be made to the recorded stream flow in both these cases, and the only way to do so at present is to make comparisons of watershed areas and precipitation.

It is thus seen that the records of wind, temperature, frost, and precipitation, as kept by the Weather Bureau, are of very great benefit to shipping, to farmers, and to engineers of power and irrigation developments. The public, if it be so minded, can return value for value received by cooperation with the Bureau. There is little labor attached to keeping the ordinary cooperative station, in fact to the average person it is a pleasure. The one general subject of interest at all times to all people is the weather, and if a thermometer is at hand we usually like to read it the first thing in the morning. The Bureau is largely dependant upon cooperative observers throughout the country,

and the value of its records can be greatly increased by assistance rendered by us in the private walks of life. The Bureau is particularly in need of observers at the higher altitudes in the West. The cooperative observer is rewarded for his small efforts by his interest in the records, by weather reports sent to him personally, and by the feeling of pride we must all have when we think we are achieving something for the benefit of our fellow men.

TABLE 1.—*Climatological data for December, 1909. District No. 10, Great Basin.*

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.				Number of rainy days, .01 inch or more.	Sky.			Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.		Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
Wyoming.																				
Border	Uinta	6,085	7	6.0	− 7.4	37	31	−30	30	50	1.10	+ 0.16	0.42	.....	5	17	7	7	w.	S. W. Condron.
Evanston	....do	6,860	13	12.0	− 8.1	41	8	−26	18	41	1.62	+ 0.24	0.93	10.0	6	16	8	7	sw.	Frank Tucker.
Idaho.																				
Geneva	Bear Lake	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	F. W. Boehme.
Grace	Bannock	5,400	3	15.9	.....	35	9†	−10	18	30	1.06	.....	0.75	3.9	5	17	3	11	n.	E. A. Ekern.
Oxford	....do	4,750	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Edwin Smith.
Paris	Bear Lake	5,946	13	.....	.....	39	31	.....	.....	.....	1.09	+ 0.06	1.00	16.0	4	14	5	12	.....	John Norton.
Stone	Oneida	4,520	2	.....	.....	41	17	.....	.....	.....	.....	.....	.....	24.0	10	13	9	9	s.	Thos. W. Roe.
Weston	....do	4,610	12	14.5	− 9.6	37	9	−18	18	36	2.04	+ 0.95	0.80	12.5	8	7	7	17	s.	Wm. T. Chatterton.
Utah.																				
Annabella	Sevier	5,250	4	.....	.....	.....	.....	.....	.....	.....	1.78	.....	0.64	19.0	9	.....	.....	.....	.....	J. W. Fairbanks.
Beaver	Beaver	6,000	6	22.2	.....	48	30	− 4	18	32	1.56	.....	0.50	14.0	8	13	7	11	n.	James Connell.
Black Rock	Millard	4,873	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	A. H. Cassell.
Blacksmiths Fork	Cache	5,500	.....	.....	.....	.....	.....	.....	.....	.....	1.50	.....	0.68	15.0	5	8	3	20	.....	U. S. Forest Service.
Card Canyon	....do	5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16.6	6	9	7	15	.....	Do.
Castle Rock	Summit	6,244	6	.....	.....	.....	.....	.....	.....	.....	0.93	.....	0.40	13.5	5	11	9	11	ne.	David Moore.
Cedar City	Iron	5,750	4	23.7	.....	49	1	− 2	18	37	0.65	.....	0.16	7.0	8	10	3	18	s.	J. M. Foster.
Corinne	Boxelder	4,240	39	16.8	−12.2	39	11	− 7	29	35	1.79	+ 0.24	1.24	5.5	5	12	4	15	nw.	A. C. Murphy.
Coyoto	Garfield	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Mrs. E. Clayton.
Deseret	Millard	4,541	15	21.8	− 4.1	48	31	− 0	18†	32	0.90	+ 0.37	0.35	4.0	6	14	4	13	n.	S. W. Western.
Enterprise (near)	Washington	4,270	1	.....	.....	.....	.....	.....	.....	.....	0.49	.....	0.13	7.0	5	8	12	11	s.	John Day.
Farmington	Davis	4,267	9	22.5	.....	47	31	3	18	37	4.05	.....	1.40	24.5	9	15	2	14	n.	Charles Boylin.
Fillmore	Millard	5,100	19	25.7	− 4.8	50	9	1	18	35	1.22	+ 0.12	0.38	.....	11	.....	.....	.....	.....	J. J. Starley.
Frisco	Beaver	7,318	15	21.0	−13.5	48	1	− 9	6	35	0.33	− 0.07	0.20	.....	.....	.....	.....	.....	.....	E. R. Smyth.
Garland	Boxelder	4,350	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Harry B. Shaw.
Garrison	Millard	.....	6	.....	.....	.....	.....	.....	.....	.....	0.20	.....	0.20	.....	.....	8[e]	0	18[e]	n.	E. M. Smith.
Golden Reef	Beaver	7,000	.....	.....	.....	.....	.....	.....	.....	.....	1.55	.....	0.40	15.5	6	.....	.....	.....	.....	D. W. Woodard.
Government Creek	Tooele	5,277	9	19.0	.....	47	1	− 9	18	32	1.61	.....	0.37	14.0	11	12	8	11	s.	Walter James.
Heber	Wasatch	5,606	16	13.7	− 9.2	40	2†	−26	18	40	4.43	+ 2.80	1.85	43.0	8	15	2	14	n.	John Crook.
Henefer	Summit	5,301	10	13.6	.....	42	8	−22	18	35	2.02	.....	0.70	17.5	11	15	4	12	n.	Wm. Brewer.
Hoyts Canyon	....do	7,400	.....	.....	.....	.....	.....	.....	.....	.....	5.53	.....	.....	.....	.....	.....	.....	.....	.....	James Woolstenhulme.
Huntsville	Weber	5,100	14	.....	.....	.....	.....	.....	.....	.....	4.36	+ 2.54	1.36	.....	8	9	10	12	.....	Lars Petersen.
Ibapah (near)	Tooele	7,500	4	18.0	.....	47[e]	30	− 9[e]	18	32[e]	0.24[k]	.....	0.09[k]	3.0[k]	4	11[k]	1[k]	8[k]	e.	E. S. Gamwell.
Kanosh	Millard	5,250	1	.....	.....	.....	.....	.....	.....	.....	0.83	.....	0.34	.....	5	.....	.....	.....	.....	Geo. Crane.
Kelton	Boxelder	4,230	31	13.4	.....	37	9	−13	18	35	1.10	+ 0.37	0.40	11.0	5	16	4	11	.....	F. W. Klock.
Levan	Juab	5,010	19	17.2	− 8.4	42	2†	−14	18	28	3.17	+ 1.51	0.75	23.9	14	14	4	13	n.	Wm. Brown.
Logan	Cache	4,507	18	15.5	−10.4	35	8†	− 7	18	32	2.38	+ 1.36	0.60	.....	9	.....	.....	.....	.....	State Agricultural College
Lucin	Boxelder	4,504	5	15.8	.....	50	1	−12	24	35	0.90	.....	0.30	.....	4	12	12	7	.....	C. J. Burke.
Lund	Iron	5,086	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	M. E. Smith.
Manti	Sanpete	5,575	15	15.8	− 9.8	47	31	−18	18	35	1.86	+ 1.06	0.64	5.5	9	10	9	12	.....	J. M. Anderson.
Marion	Summit	6,750	5	.....	.....	.....	.....	.....	.....	.....	2.40	.....	0.83	11.5	8	5	8	18	nw.	James Woolstenhulme.
Marysvale	Piute	6,180	10	16.8	.....	51	1	−20	18	43	1.53	.....	0.60	10.1	11	11	8	12	ne.	John W. Henry.
Meadowville	Rich	6,200	10	18.0	.....	42	31	− 5	18	28	0.55	.....	0.28	5.5	5	11	2	18	w.	J. S. Moffat.
Milford	Beaver	4,962	5	16.3	.....	40	13	− 6	25	31	0.80	.....	0.50	1.0	3	12	0	19	.....	C. M. Temple.
Millville	Cache	4,848	14	.....	.....	.....	.....	.....	.....	.....	2.28	+ 1.23	0.77	.....	9	.....	.....	.....	.....	Fred Yeates.
Minersville	Beaver	5,070	12	.....	.....	.....	.....	.....	.....	.....	0.98	.....	0.21	5.7	7	.....	.....	.....	.....	Geo. Roberts.
Modena	Iron	5,479	9	19.9	−11.8	49	1	−11	24	38	1.02	+ 0.21	0.23	8.9	11	9	11	11	w.	U. S. Weather Bureau.
Morgan	Morgan	5,080	6	14.4	.....	42	31	−22	18	42	3.15	.....	0.80	23.0	8	10	11	10	nw.	W. Visick.
Moroni	Sanpete	5,519	1	.....	.....	.....	.....	.....	.....	.....	2.38	.....	0.52	17.0	9	3	24	4	.....	B. F. Eliason.
Mount Nebo	Utah	4,650	8	19.8	.....	45	1†	−10	18	28	1.11	.....	0.40	12.0	9	15	5	11	n.	D. C. Walkey.
Mount Pleasant[d]	Sanpete	5,859	17	18.6	− 8.6	40	1†	−15	18	34	.....	.....	.....	.....	.....	9	18	4	.....	Jane Martin.
Nephi	Juab	6,059	6	.....	.....	.....	.....	.....	.....	.....	2.45	.....	0.54	21.5	13	16	8	7	nw.	A. Madsen.
Nephi (near)	....do	6,059	.....	.....	.....	.....	.....	.....	.....	.....	2.25	.....	0.74	18.0	14	12	9	10	n.	S. R. Boswell.
Oak City	Millard	4,900	5	21.8	.....	46	2	− 3	18	37	2.43	.....	1.00	20.0	.....	10	6	15	.....	Jos. Finlinson.
Ogden (1)	Weber	4,310	8	20.7	− 9.0	39	8†	− 9	22	31	3.86	+ 2.21	1.10	22.0	6	10	2	19	nw.	Enoch Farr.
Ogden (2)**	....do	4,310	39	24.1	− 7.5	45	31	3	18	....	2.46	+ 0.85	1.10	22.0	11	7	6	18	e.	W. H. Chevers.
Panguitch	Garfield	6,560	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	F. C. Syrett.
Panguitch Lake	....do	9,000	.....	.....	.....	.....	.....	.....	.....	.....	2.31	.....	0.88	17.0	5	11	8	12	n.	James E. Prince.
Park City	Summit	7,800	12	18.6	− 9.2	53	1	−14	18	36	4.68	+ 2.73	2.00	.....	9	14	5	12	.....	Irvin Evans.
Parowan	Iron	5,970	18	22.4	− 6.4	50	1	− 5	18	35	1.29	+ 0.42	0.35	.....	7	.....	.....	.....	.....	Scott Matheson.
Payson	Utah	4,637	6	.....	.....	.....	.....	.....	.....	.....	2.48	.....	0.78	27.0	11	9	.....	22	sw.	D. L. Coombs.
Pinto	Washington	5,907	12	20.5	− 6.6	49	1	− 6	26†	44	2.77	+ 2.11	1.67	14.0	7	11	4	16	n.	John H. Harrison.
Promontory	Boxelder	4,913	38	.....	.....	.....	.....	.....	.....	.....	3.00	+ 2.18	1.00	30.0	6	.....	.....	.....	.....	F. C. Houghton.
Provo	Utah	4,532	17	19.5[e]	.....	50[e]	31	− 7[e]	18	30	1.35	.....	1.20[e]	4.5[e]	1[e]	10	9	12	.....	James A. Oliver.
Randolph	Rich	6,442	6	.....	.....	.....	.....	.....	.....	.....	0.59	.....	0.30	12.0	3	14	1	16	.....	Wm. Rex.
Richfield	Sevier	5,350	19	17.4	−11.2	46	1	−17	18	34	1.46	+ 0.81	0.66	.....	4	9	1	21	.....	Joseph J. Jensen.
Richins Summit	Summit	6,500	.....	.....	.....	.....	.....	.....	.....	.....	2.35	.....	0.24	6.5	13	.....	.....	.....	.....	Ernest H. Brewer.
Saltair	Salt Lake	4,220	6	25.2	.....	46	10	10	19	20	1.94	.....	0.41	12.5	11	.....	.....	.....	.....	E. J. Bench.
Salt Lake City	....do	4,366	35	24.0	− 8.1	48	31	4	18	26	1.50	+ 0.17	0.59	13.8	11	7	12	12	se.	U. S. Weather Bureau.
Scipio	Millard	5,260	14	16.8	− 9.8	51	1	−27	18	48	2.96	+ 1.93	0.77	17.0	8	13	4	14	sw.	Thos. Memmott.
Silver Lake	Salt Lake	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	N. S. Fetherolf.
Soldier Summit	Utah	7,474	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Agent, D. & R. G. Ry.
Spanish Fork Canyon	....do	.....	.....	22.6[b]	.....	48[b]	2[b]	− 4[b]	18[b]	26[b]	.....	.....	.....	.....	.....	11[d]	0[d]	16[d]	.....	U. S. Reclamation Service
Thistle	....do	5,075	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Agent, D. & R. G. Ry.
Tooele	Tooele	4,900	13	22.6	− 7.9	49	31	3	17†	31	1.99	+ 1.01	0.52	.....	11	7	11	13	nw.	E. A. Bonelli.
Utah Lake Pump'g Sta.	....do	4,500	4	19.3	.....	39	31	−14	18	33	2.32	.....	0.65	16.5	14	7	14	10	.....	W. A. Knight.
West Canyon	Tooele	7,800	.....	.....	.....	.....	.....	.....	.....	.....	1.85	.....	.....	17.5	.....	.....	.....	.....	.....	Walter James.
Oregon.																				
Ana River	Lake	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.72	.....	0.28	5.5	7	13	10	8	nw.	Curtis Duvall.
Burns	Harney	4,157	19	16.4	− 9.8	44	1	−11	27	34	2.29	+ 1.14	0.41	24.0	7	10	8	13	e.	J. C. Welcome, jr.
Burns Mill	....do	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.53	.....	0.85	25.3	8	25	4	2	.....	John P. Sayer.
Cecils Ranch	....do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	H. D. Cecil.
Christmas Lake	Lake	.....	1	21.8	.....	44	8†	−16	6	44	1.01	.....	0.50	15.0	9	4	8	19	e.	John C. Green.
Paisley	....do	4,500	5	27.0	.....	50	12	2	23	35	0.77	.....	0.23	7.0	13	15	4	12	.....	E. C. Woodward.
"P" Ranch	Harney	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.61	.....	0.44	.....	3	13	6	12	.....	A. M. Byrd.
Silver Lake	Lake	4,700	14	25.4[e]	− 4.8	46[f]	11†	− 6	6	37	0.70	− 0.45	0.20	8.0	5	20	3	8	ne.	E. K. Henderson.
California.																				
Truckee	Nevada	5,819	38	17.2	−11.5	40	1	− 2	6†	25	12.21	+ 7.91	2.40	30.1	13	11	0	20	ne.	Agent, So. Pac. Co.
Nevada.																				
Austin	Lander	6,594	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	J. F. Wiseman.
Battle Mountain	....do	4,843	39	23.8	− 7.3	62	1	− 6	28	47	0.83	+ 0.13	0.20	2.5	4	13	6	12	n.	Agent, So. Pac. Co.
Beowawe	Eureka	4,905	39	21.6	− 8.2	44	5†	− 3	29	30	1.30	+ 0.53	1.00	3.0	4	20	2	9	nw.	Do.
Carlin	Elko	5,232	39	19.6	− 6.8	45	1	−10	20	47	0.81	+ 0.43	0.20	10.0	7	13	0	18	.....	Do.
Carson Dam	Churchill	4,032	3	29.2	.....	56	1	10	4	25	0.96	.....	0.37	0.5	4	7	3	21	e.	U. S. Reclamation Service
Cherry Creek	White Pine	6,450	1	19.6	.....	46	30	−11	18	38	2.11	.....	0.72	10.2	10	12	10	9	nw.	J. H. Leishman.
Clover Valley	Elko	6,000	10	15.3	.....	40	1	−12	18	35	3.04	.....	2.00	18.0	8	13	3	15	.....	J. F. Wiseman.
Cobre	....do	.....	.....	18.4	.....	48	19	−15	21	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	Agent, So. Pac. Co.

TABLE 1.—*Climatological data for December, 1909. District No. 10*—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
Nevada—Cont'd.																				
Columbia	Esmeralda	5,750	3	26.2	.....	55	1	5	18	32	0.27	.....	0.20	0.5	4	9	13	9	se.	A. Booth.
Dutton	Elko	5,100	2	21.0	.....	56	3	−14	15†	49	1.80	.....	0.80	18.0	4	15	13	3	n.	Golconda Cattle Co.
Elko	....do	5,342	39	15.0	−12.0	53	1	−20	25	52	.....	.....	.....	.....	.....	16	2	13	e.	Agent, So. Pac. Co.
Ely	White Pine	6,421	19	20.9	− 5.7	54	1	−10	18	40	1.87	+ 0.83	1.30	6.0	4	26	4	1	w.	G. C. Hunting.
Eureka	Eureka	6,500	7	20.6	−12.0	48	1	− 6	18	31	0.71	− 0.38	0.25	15.0	8	9	7	15	s.	Clay Simms.
Fallon	Churchill	3,965	5	27.6	− 4.4	55	1	8	24	29	1.30	+ 0.66	0.83	2.5	7	11	4	16	w.	U. S. Reclamation Service
Fernley	Lyon	4,200	2	29.2	− 3.0	56	1	11	3†	31	.....	.....	.....	.....	.....	2	10	19	w.	Do.
Gardnerville	Douglas	4,830	10	29.1	− 3.3	58	1	5	6	31	4.80	+ 2.81	1.20	24.0	9	4	7	20	e.	William Dangberg.
Geyser	Lincoln	.....	5	16.7	.....	48	14	−23	24	57	0.90	.....	0.60	9.0	....	12	11	8	n.	Mrs. J. F. Wambolt.
Golconda	Humboldt	4,697	31	23.0	− 9.7	58	1	− 4	21	37	1.25	+ 0.40	0.50	3.0	6	10	5	16	nw.	Agent, So. Pac. Co.
Halleck	Elko	5,631	17	10.5	−14.4	37	3	−25	12	37	0.90	− 0.28	0.50	9.0	2	7	5	19	nw.	Do.
Hamilton	White Pine	7,977	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	George Allen.
Humboldt	Humboldt	4,236	39	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Agent, So. Pac. Co.
Jean	Clark	2,074	2	37.6	.....	70	3	1	25	44	1.59	.....	0.40	8.0	5	1	18	12	sw.	Agent, Salt Lake Route.
Leetville	Churchill	4,020	3	28.8	.....	60	1	10	19	30	1.45	.....	0.50	2.0	5	9	6	16	n.	U. S. Reclamation Service
Lewers Ranch	Washoe	5,500	22	27.8	− 6.6	52	8	3	6	33	10.60	+ 7.19	3.30	21.0	10	11	8	12	.....	Ross Lewers.
Lovelock	Humboldt	3,977	17	.....	.....	65	11	.....	.....	.....	0.28	+ 0.09	0.25	1.5	3	.....	.....	.....	.....	John S. Case.
McAfees Ranch*	Esmeralda	4,835	6	20.1	.....	49	1	−13	4†	60	0.20	.....	0.20	3.0	1	3	0	28	n.	G. A. McAffee.
Millett	Nye	.....	2	19.0	.....	52	1	− 9	24	35	0.75	.....	0.40	4.0	4	14	3	14	n.	Fred J. Jones.
Mina	Esmeralda	4,600	3	27.2	.....	54	2	5	3	38	1.20	.....	0.70	5.0	3	12	3	16	w.	Angent, So. Pac. Co.
Palmetto	....do	6,780	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Isaac McConnell.
Potts	Nye	6,990	17	16.4	− 8.5	43	30	−11	18	37	0.77	+ 0.26	0.30	7.0	4	9	4	18	n.	Miss Mamie Potts.
Quinn River Ranch	Humboldt	4,350	8	24.0	.....	55	1	−10	6	42	1.43	.....	0.35	5.7	10	9	0	22	w.	F. M. Payne.
Reno	Washoe	4,532	39	29.6	− 4.1	55	13	8	6	27	2.42	+ 0.75	1.45	2.3	8	6	13	12	sw.	U. S. Weather Bureau.
Soda Lake	Churchill	4,534	3	28.4	.....	55	1	12	19	25	1.36	.....	0.62	3.8	9	5	9	17	n.	U. S. Reclamation Service
Tecoma	Elko	4,812	32	.....	.....	.....	.....	.....	.....	.....	0.85	+ 0.18	0.20	8.5	7	6	18	7	.....	Agent, So. Pac. Co.
Tonopah	Nye	6,090	3	24.2	.....	48	1	9	4	26	0.16	.....	0.04	3.4	7	11	12	8	se.	U. S. Weather Bureau.
Wabuska	Lyon	4,347	7	25.6	.....	60	2	0	19	38	0.22	.....	0.10	T.	6	6	10	15	ne.	J. G. Young.
Wells	Elko	5,631	38	13.0	−12.1	42	31	−18	17	49	1.65	+ 0.62	0.40	16.5	9	9	0	22	n.	Agent, So. Pac. Co.
Winnemucca	Humboldt	4,432	31	23.5	− 7.2	44	1	1	24	27	2.44	+ 1.45	1.06	6.1	14	6	5	20	ne.	U. S. Weather Bureau.

* Precipitation included in that of the next measurement.
** Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.
† *Also on other dates.*
‡ Separate dates of fall not recorded.
§ Data are from standard instruments not supplied by the U. S. Weather Bureau.
§§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.
‖ Estimated by observer.
‖‖ Precipitation for the 24 hours ending on the morning when it is measured.
T. Precipitation is less than 0.01 inch rain or melted snow.
a, b, c, *etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.*

TABLE 2.—*Daily precipitation for December, 1909. District No. 10, Great Basin.*

Stations.	River basins.	Day of month.																													Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Wyoming.																																	
Border	Bear		.06	T.	T.	.36				.42			.07																			.19	1.10
Evanston	...do	.31	.62			T.				.15	.21		T.	.13	T.						T.	T.									.20	1.62
Idaho.																																	
Geneva	Bear	*	*	*	1.10																											.42	1.52
Grace	...do	T.	.17	.12			T.		T.	T.	.01		.01				T.															.75	1.06
Oxford	...do																																
Paris	...do			.02		.05	.02																									1.00	1.09
Stone	Deep Creek																																
Weston	Bear		.22			.30		.11	.05	.40			.11	.05																		.80	2.04
Utah.																																	
Annabella	Sevier		.40	.16		.16	.64	.15		.23							.02					.01	.01									1.78
Beaver	...do	.02	.05			.25	.15	.50		.40				T.									.04								.15	1.56
Black Rock	...do																																
Blacksmiths Fork	Bear	.09						.65						.68										.07					.01			1.50
Card Canyon	...do																																
Castle Rock	Weber	.40			T.					.20			.05	.03							T.											.25	0.93
Cedar City	Desert		.14	.01		.03	.03	.13		T.	.16													.12								.03	0.65
Corinne	Bear					.40				1.24			.05										.05		.05								1.79
Coyoto	Sevier																																
Deseret	...do		.18					.04		.35			.20									.03										.10	0.90
Enterprise (near)	Desert			T.		*	.13															*	*	.36								0.49
Farmington	Great Salt Lake	1.40	.10	.60	.10	.15	.40	T.		.40	.60			.30			T.						T.	T.								T.	4.05
Fillmore	Sevier	.01	.38	.10			.13	.14		.05	.20			T.	.02		T.	.01				T.	.01									.17	1.22
Frisco	Desert					.08														.20												.05	0.33
Garland	Bear																																
Garrison	Desert																																
Golden Reef	...do		.40		.35					.30	.10								.10			.30											1.55
Government Creek	...do		.30	.05		.35	.02	.04		.26	.37			.05	T.		T.				T.		.07								.10	1.61
Heber	Jordan	.38	.50			.08		.12		.80	.30			.40							T.		T.		T.							1.85	4.43
Henefer	Weber	.25	.29	T.		.09	.09	.05	T.	.70	.29	.01	T.	.05							.05		T.									.15	2.02
Hoyts Canyon	...do																																5.53
Huntsville	...do	1.36	.12				*	*	*	1.91				.17																		.80	4.36
Ibapah (near)	Desert												T.	.10			.03	.09			T.											.02	0.24
Kanosh	Sevier				.09	.04		.28			.34												.08										0.83
Kelton	Great Salt Lake						.40	.20	.10	.30																						.10	1.10
Levan	Sevier	.02	.34	.06		.75	.28			.35	.56			.01	.09			.03				T.	.05	.05								.58	3.17
Logan	Bear			.03	.27	.10				.45	.60	.30	.03																			.60	2.38
Lucin	Desert	.30	.20			.20				.20																							0.90
Lund	...do																																
Manti	Sevier	.12	.31			.05	T.	.05		.38				.21									.05	.05								.64	1.86
Marion	Weber	.27	.65			.04	T.	T.		.43	.11		T.	.05	T.		T.		T.		.02		T.	T.								.83	2.40
Marysvale	Sevier	.02	.09			.02	.02	.27		.15	.24			.02							T.	.09	.01	T.								.60	1.53
Meadowville	Bear		.15							.10	.28		.02						T.	T.												0.55
Milford	Sevier		.50			.20																.10											0.80
Millville	Bear	.40				.04	.10	.03		.77	.27																					.36	2.28
Minersville	Sevier		.11	T.		.20	.10			.21	.11											.05										.20	0.98
Modena	Desert	.02	T.	.01	.09		.11	.04	.22	.02											.09	.23	.03									.16	1.02
Morgan	Weber		.80			.60		.20	.20	.60	.20		.30																			.25	3.15
Moroni	Sevier	T.	.15	.42		.52		.13		.50	.14				.24								.19									.09	2.38
Mount Nebo	Jordan	T.	.02	.04	.01	.14		.04		.28	.14			.04																		.40	1.11
Mount Pleasant	Sevier																																
Nephi	Jordan	.05	.24		.08	.32	.18	.10		.37	.36	.02			.12								.03	.04								.54	2.45
Nephi (near)	...do	*	.20	*	.25			.50	*	*	.44			.07	.05																	.74	2.25
Oak City	Sevier	.13	.25	.30		1.00	.27	.30	.21	.24																						1.03	2.43
Ogden (1)	Weber	.31	1.10							.90	.78			.45																		.33	3.86
Ogden (2)	...do	.31			.11	.15	.06	T.		1.10			.16	.15									.15	.10	.08							.09	2.46
Panguitch	Sevier																																
Panguitch Lake	...do		.21			.07		.50		.88				T.								.65										*	2.31
Park City	Weber	.20	.80			.44		.13		2.00			.10	.20								.10										.71	4.68
Parowan	Desert	*	.20			.35	.05	.20			.15												.15									.19	1.29
Payson	Jordan	.08	.52	T.	.18	.26	.06	.12		.14	.78			.13			T.	T.						.06								.25	2.48
Pinto	Desert		T.		.02	.09		.08		.65											*	*	.26							*	1.67	2.77
Promontory	Great Salt Lake	.20					.80			1.00		.40				.40													.20				3.00
Provo	Jordan						*	*	*	*	*	1.20												.05	.10							T.	1.35
Randolph	Bear		.13	T.	T.	T.	T.	T.	T.	T.	.30								T.	T.	T.	T.	T.								T.	.16	0.59
Richfield	Sevier	T.	T.			.20		.66		.40	T.				T.								20										1.46
Richins Summit	Weber	T.	T.	.50		T.	.24	.07		T.	T.	1.25	T.	.05							.07		T.									.17	2.35
Saltair	Great Salt Lake	.51		.30	.17	.09	.09			.09	.41	.03		.12											.10							.03	1.94
Salt Lake City	Jordan	.59	.05	.20	T.		.06			.33	.03		.10	.10	T.		T.						.01	.01	.02							T.	1.50
Scipio	Sevier	.12	.46		T.	.77	T.	.31		.17	.32			.04																		.77	2.96
Silver Lake	Jordan																																
Spanish Fork Canyon	...do																																
Thistle	...do																																
Tooele	Great Salt Lake	.22	.49	.47	.03		T.	T.		.09	.52		T.	.03	.01		.02				.02	T.			T.							.09	1.99
Utah Lake Pump'g Sta	Jordan	.29	.23		*	.65	.05	.05		.38	.07	.02		.10			.05		.07				.02	.02							*	32	2.32
West Canyon	Desert		.35				*	*	*	.50	*	*	.70										*	*	.20							.10	1.85
Oregon.																																	
Ana River	Interior Drainage		T.		T.	.02	.10	.10		T.			.15							T.	.01										.06	.28	0.72
Burns	...do				.40		.21	.30	.40			.41														.36						.21	2.29
Burns Mill	...do		.05		.85	.02	.01	.60	.40			.20								T.						.40							2.53
Cecils Ranch	...do																																
Christmas Lake	...do	T.			T.	.01	.05	T.	.09	.08		.50	.05								T.	.01				.16						.06	1.01
Paisley	...do		T.	.02		.01	.04	.01	.08	.21			.01							.02	.08	.01							.02		.03	.23	0.77
"P" Ranch	...do								.05					.44																	.12		0.61
Silver Lake	...do		T.		.15	.20	.15						.10									T.									.05	.05	0.70
California.																																	
Boca	Truckee	.63	2.11		1.50	T.	.10	.38	.59	2.23	.30									T.						.10					2.19	.20	9.70
Bodie	East Walker				0.76		0.26	0.12													*	0.07									*	3.01	4.22
Bridgeport	...do																																
Donner Ice Camp	Truckee																																
Fales Hot Springs	West Walker	.28				.51		.21		.65	.05										.30											2.25	4.25
Hobart Mills	Truckee	1.10	.25			1.11		.62	.15	1.60	.26										.06		.06				.11					.50	2.31	8.13
Lundy	East Walker	.50				.30			*	2.50											.10											*	2.00	5.40
Markleysville	Carson	1.10	.18				1.40		.05	.95			.04								.25					T.	T.					.85	1.84	6.66
Shields Ranch	West Walker																																
Silver Creek	Carson	1.24	.21			T.	1.42		.09	1.00			.06								.32				.02	.02				.03	.91	1.90	7.22
Tahoe	Truckee	1.22			*	1.30		.53	.30	1.70	.40										.22					.15					1.10	2.00	8.92
Truckee	...do	1.00	.01		.80	1.40		.20	2.00	1.00	1.00									.30	.05	.05									2.00	2.40	12.21
Nevada.																																	
Austin	Reese																																
Battle Mountain	Humboldt	.56		T.		.20							T.								.05											.08	0.83
Beowawe	...do				.10	.10																									1.00	.10	1.30
Buckskin	Walker	.08	.06		.09		T.			.13																							
Carlin	Humboldt	.07	.10		.10	.20	.20			.04			T.										T.									.10	0.81

TABLE 2.—*Daily precipitation for December, 1909. District No. 10*—Continued.

Stations.	River basins.	Day of month.																													Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Nevada—Cont'd.																																	
Carson Dam	Carson	.21				T.	T.	T.		.37											T.	T.				0.5				T.	T.	.33	0.96
Cherry Creek	Humboldt	.41	.22			.14		.15		.72			.07				T.				.03	.05	.28									.04	2.11
Clover Valley	...do	2.00				.15	T.	.21		.24	.08		.20				.05				.11											T.	3.04
Cobre	...do																																
Columbia	Desert					.01			.01												*	.05									.20	0.27
Dutton	Humboldt			.80											.40									.40						.20		1.80
Elko	...do																																
Ely	...do						.11	.21		.25	T.		T.								T.										1.30	1.87
Eureka	...do	.25	.15	.09		.04				.07	.04		T.	.02				T.			T.										.05	0.71
Fallon	Carson	.24	.04		T.					.08											.03	.01				.07				T.	.83	1.30
Fernley	Truckee	.23	T.	T.				T.		T.	T.										T.	T.				T.	T.			T.		
Gardnerville	Carson	T.	.40			.40				1.20	.30										.30	.60				.40					*	1.20	4.80
Geyser	Humboldt												*	*	*	*	*	.30													.60	0.90
Glenbrook	Truckee	.50					1.00		1.00		.10										.40					.05					1.50	4.55
Golconda	Humboldt	.50	.20					.20	.10	.10																					.15	1.25
Halleck	...do	.40																											.50			0.90
Hamilton	...do																																
Humboldt	...do																																
Jean	Desert									.40	.39										.20	.40		.20							T.	T.	1.59
Leetville	Carson	.50								.25											.10					.10						.50	1.45
Lewer's Ranch	Truckee	*	2.85				1.20		2.35	*	.10									.50						.30					*	3.30	10.60
Lovelock	Humboldt			.02						.25																						.01	0.28
McAfee's Ranch	Desert																					.20											0.20
Millett	Reese	.40				.08	.15	.12																									0.75
Mina	Desert				T.				.40											.10											.70	1.20
Mount Rose Ranch	Truckee	.80	.01		*	.88	.01	.15	.02	.90	.25	T.								*	.30				.02					2.40	1.70	7.44
Palmetto	Desert																																
Paradise Valley	Little Humboldt	.25	.30	.15				.60	.60																						.60	.60	3.10
Potts	Reese	.30	.20	T.		T.	.12			.15	T.		T.								T.												0.77
Quinn River Ranch	Humboldt	.29	.05		.04	.06		.12	.03	.33											T.		.02								.14	.35	1.43
Reno	Truckee	.28			.03	.04	T.		.06	.35											.05	T.	T.			T.					.37	1.24	2.42
Smith	West Walker	.18		.17	.07		T.															.10				T.	T.			.90		.46	1.88
Soda Lake	Carson	.29	.04			.02		.02		.25											.04	.01	T.	T.		.07	T.	T.	T.		T.	.62	1.36
Sweetwater	East Walker																																
Tecoma	Humboldt	.20		.20				.20	.05				.05				.05		.10														0.85
Tonopah	Desert	.01				.04		.04	.03	.01											.01	.02											0.16
Wabuska	Walker	.05	T.							.10											.01	T.				.02					.03	.01	0.22
Wells	Humboldt	.35				.20	.40	.20	.20	.10							.10			.05			.05										1.65
Willow Point	Little Humboldt	.04	.02			.25		.30	.50												.10										.50	.30	2.11
Winnemucca	Humboldt	.99	.01		T.	.05	.06	.13	.09	.11	T.	.01	T.							.03	.03		.08	.01							.27	.57	2.44
Yerington	Walker																																

TABLE 3.—*Maximum and minimum temperatures at selected stations, December, 1909. District No. 10, Great Basin.*

Date.	Wyoming.				Weston, Idaho.		Utah.																Burns, Oreg.		Elko, Nev.	
	Border.		Evanston.				Corinne.		Deseret.		Government Creek.		Marysvale.		Modena.		Ogden (1).		Parowan.		Provo.		Salt Lake City.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	34	14	35	26	32	21	35	26	44	29	47	20	51	30	49	32	37	32	50	15	41	30	43	34	44	18	53	18
2...	31	9	32	11	31	10	35	22	36	29	46	20	47	23	42	22	37	26	47	12	43	25	41	22	31	11	42	9
3...	20	−4	11	−9	20	−4	24	16	29	15	34	4	25	10	25	14	27	12	45	10	.....	.....	26	15	26	2	26	6
4...	15	−11	10	−17	18	−9	25	10	23	5	30	−2	26	7	28	5	23	11	44	7	30	11	25	13	24	9	26	−4
5...	20	−1	12	−11	26	9	30	14	28	18	23	12	24	14	23	12	27	15	37	3	.....	.....	30	23	24	−10	33	5
6...	23	1	19	−4	27	1	28	16	31	14	32	10	32	12	25	3	29	22	33	10	.....	.....	28	18	24	−2	37	−10
7...	22	−1	19	−3	31	1	32	5	35	20	29	13	38	12	28	20	32	12	30	11	.....	.....	33	24	32	23	37	11
8...	32	5	41	21	36	26	35	7	36	13	39	24	35	5	31	23	39	29	34	18	.....	.....	41	31	38	24	37	9
9...	32	23	32	23	37	0	25	15	47	30	39	30	45	27	38	27	38	26	40	22	.....	.....	45	32	36	26	42	20
10...	32	10	32	12	37	17	24	16	42	19	39	10	25	5	36	9	36	22	30	10	.....	.....	32	23	30	4	36	5
11...	17	−11	23	−6	30	1	39	8	34	11	33	5	27	−8	31	12	29	15	40	9	45	1	30	18	30	5	32	−14
12...	22	−2	30	−2	28	7	35	10	33	13	33	10	26	−2	35	10	29	17	41	8	.....	.....	29	21	30	9	36	−6
13...	31	19	30	22	37	18	36	13	39	23	36	24	37	12	40	19	38	25	40	7	.....	.....	35	25	24	7	40	−4
14...	27	10	26	15	33	6	24	5	37	20	32	13	32	10	33	17	32	22	40	6	.....	.....	30	22	36	2	31	−14
15...	18	−12	29	−5	21	−3	32	−1	34	10	32	6	29	7	32	8	27	10	39	9	.....	.....	30	16	24	−2	22	−8
16...	11	−11	30	−6	22	−3	24	7	26	10	23	2	27	−6	30	8	22	9	35	0	.....	.....	23	15	25	−2	24	−9
17...	5	−23	10	−17	20	−16	19	2	24	2	20	−5	18	1	23	6	15	0	33	8	31	1	21	8	26	0	26	0
18...	10	−12	15	−26	16	−18	17	−6	22	0	21	−9	16	−20	23	1	12	1	25	−5	18	−7	18	4	29	2	26	−10
19...	15	−5	18	−8	20	−9	21	−2	23	0	25	−1	22	−13	26	1	18	6	30	0	20	−4	22	7	22	6	26	−5
20...	15	−10	11	−1	25	−3	19	5	29	10	26	1	23	5	24	6	22	12	31	0	30	13	26	16	32	−1	26	9
21...	4	−27	8	−1	24	3	22	6	26	13	24	5	24	7	24	16	24	18	26	1	29	15	28	20	26	−1	25	−15
22...	13	−11	18	−10	23	−3	25	2	25	16	27	7	26	−3	28	4	22	9	30	9	35	17	28	17	28	−2	28	−11
23...	5	−18	21	−9	23	−1	24	5	25	15	22	1	29	3	28	−6	24	14	29	14	28	12	28	18	30	4	26	−4
24...	15	−16	20	−6	22	−6	21	1	29	13	27	1	18	−10	17	−11	26	15	31	5	26	8	26	16	32	5	26	−13
25...	2	−25	25	−7	25	−6	23	2	31	0	27	0	35	−8	33	−5	23	16	38	3	27	4	29	13	30	8	32	−20
26...	20	−21	34	−2	25	−3	24	5	33	6	29	1	33	−2	35	−3	26	16	45	3	26	10	29	16	26	5	37	−7
27...	25	−16	35	9	30	11	32	−3	32	6	29	4	37	−10	32	−6	24	6	35	4	24	2	28	16	20	−11	36	−15
28...	18	−9	26	−6	26	0	20	−5	33	1	30	4	27	−9	25	−3	22	6	37	5	25	−1	27	12	20	−7	36	−9
29...	7	−15	32	−7	17	−5	22	−7	32	0	32	1	28	−8	28	0	18	−6	40	6	29	−1	25	11	24	−2	34	−8
30...	5	−30	38	−1	19	−5	21	−4	24	6	37	6	33	−2	43	5	23	5	42	5	23	4	24	12	26	0	26	−3
31...	37	−13	36	22	37	15	37	18	48	24	40	12	40	26	41	33	39	19	48	20	50	21	48	22	24	5	48	22
Mns	18.3	−6.9	24.1	−0.1	26.4	2.6	26.8	6.7	31.0	12.7	30.7	7.4	29.8	3.7	30.8	9.0	27.1	14.3	37.1	7.6	.....	.....	29.9	18.1	28.5	4.2	32.6	−2.5

Date.	Nevada.																									
	Ely.		Eureka.		Fallon.		Jean.		Lovelock.		Millett.		Mina.		Quinn River Ranch.		Reno.		Tecoma.		Tonopah.		Winnemucca.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	54	18	48	34	55	29	69	27	62	15	53	28	54	28	55	37	51	41	56	18	48	39	44	32
2	47	20	43	12	49	29	70	28	60	14	33	23	55	17	48	22	41	23	48	8	41	15	34	21
3	41	8	20	6	31	18	58	31	50	11	26	15	30	5	31	15	31	15	46	8	20	10	29	14
4	40	5	20	−4	32	12	43	13	64	18	27	15	32	20	25	3	36	14	44	6	24	9	32	10
5	45	12	25	14	42	26	67	29	65	10	29	20	30	7	33	16	37	16	46	8	21	17	36	20
6	48	15	25	3	33	13	63	21	57	8	31	−6	40	26	26	−10	35	8	44	6	20	14	25	8
7	45	16	32	16	41	12	45	26	40	12	34	19	33	26	31	15	44	25	48	8	26	18	36	22
8	42	8	30	20	45	32	41	33	53	11	41	13	49	29	39	25	49	34	52	10	28	23	40	29
9	44	6	37	22	45	35	55	36	57	14	39	21	40	11	42	30	44	30	50	12	39	25	43	29
10	31	8	30	10	40	23	63	32	60	18	27	4	37	10	40	13	40	25	46	5	28	20	40	19
11	31	−7	31	4	41	19	52	30	65	9	29	10	36	12	35	10	43	21	42	3	31	19	36	15
12	41	−9	39	10	37	19	54	33	38	22	40	12	43	11	36	26	55	29	42	6	40	27	38	26
13	36	−1	38	15	46	18	64	29	43	22	34	6	40	16	48	20	43	27	46	−5	36	27	43	23
14	38	1	31	4	39	18	68	35	49	25	31	4	40	14	49	11	39	26	44	−7	29	18	36	17
15	36	3	34	4	38	13	65	32	39	13	37	5	40	15	36	8	41	20	44	−8	29	18	32	11
16	42	2	30	4	38	12	69	33	.....	.....	32	13	35	22	42	6	41	17	46	8	30	18	37	12
17	31	5	26	2	35	12	51	32	.....	.....	30	−2	37	10	42	16	37	18	42	15	23	14	31	14
18	21	−10	26	−6	39	12	64	20	.....	.....	22	−1	36	9	47	5	41	16	40	12	24	10	37	10
19	24	0	24	2	33	11	.....	.....	.....	.....	27	10	30	12	37	2	33	16	34	19	26	15	29	10
20	18	−5	21	10	29	21	46	12	.....	.....	22	5	33	10	29	12	28	23	32	19	22	16	27	13
21	20	2	23	1	32	18	37	25	.....	.....	24	5	30	9	35	−2	30	13	32	22	26	14	26	2
22	24	0	29	2	38	21	46	27	.....	.....	23	−6	35	15	29	11	37	17	24	18	22	18	24	8
23	22	−5	28	3	32	26	42	17	.....	.....	27	−3	43	21	37	11	36	18	36	18	23	17	26	7
24	20	−8	30	2	35	8	37	6	.....	.....	23	−9	43	11	27	16	38	15	38	16	26	14	28	1
25	38	4	32	11	28	15	34	1	.....	.....	26	−4	40	6	28	5	30	21	38	16	30	18	29	5
26	36	6	38	11	29	21	36	11	.....	.....	32	5	35	12	35	17	36	19	38	14	30	22	37	10
27	40	10	40	10	27	16	38	3	.....	.....	29	−6	32	14	27	17	29	18	42	12	27	13	25	13
28	45	6	35	10	25	20	36	12	.....	.....	30	−5	34	16	22	14	27	16	40	8	28	14	20	12
29	40	5	40	9	25	21	44	11	.....	.....	30	−1	40	20	20	8	31	17	43	14	38	22	22	9
30	51	14	42	17	27	20	43	20	60	28	27	7	42	29	21	6	43	18	42	12	42	31	25	5
31	48	12	41	31	34	24	56	32	57	27	44	25	45	29	35	17	42	33	48	8	41	30	36	25
Mean	36.7	5.1	31.8	9.3	36.1	19.2	51.9	23.2	.....	.....	30.6	7.3	38.4	15.9	35.1	13.0	38.4	23.9	42.4	10.0	29.6	18.9	32.4	14.6